

90-248023/33	A41 E17	BADI 04.02.89 *EP -382-050-A	A(1-E14), E(10-E4B, 10-E4C) N(2-D, 3-D, 3-E, 4-B)
BASF AG 04.02.89-DE-903363 (16.08.90) C07c-29/13 C07c-31/20	Butane-1,4-diol(s) and pentane-1,5-diol(s) prodn. by hydrogenation of correxp. lactone(s) in presence of a catalyst contg. cobalt and manganese etc.. C90-107070 R(BE) CH DE FR GB IT LU NL	<b>ADVANTAGE</b> Use of (III) enables the prodn. of (I) in good yield even at temps. in the lower part of the above temp. and pressure ranges; prior-art catalyst present problems w.r.t. toxic effluent disposal (high-Cr catalysts), radioactive waste ( <sup>137</sup> h-contg. catalysts) or low selectivity.	(III) contains Co and at least two of the elements Mn, Cu, P and Mo or (III) contains Co and at least three of the elements Mn, Cu, P, Mo and Na; at least 40 wt. % of the active catalyst material consists of Co, pref. with up to 10 wt. % Mn, up to 10 wt. % P and up to 1 wt. % Na as other active components, esp. pref. 40-80 wt. % Co, 3-7 wt. % Mn, 0.1-3 wt. % P and 0.01-0.5 wt. % Na, or with up to 10 wt. % Mn, up to 30 wt. % Cu, up to 5 wt. % Mo, up to 10 wt. % P and up to 1 wt. % Na, esp. pref. 40-60 wt. % Co, 3-7 wt. % Mn, 0.1-3 wt. % P, 12-20 wt. % Cu, 0.5-5 wt. % Mo and 0.01-0.5 wt. % Na.
Prepn. of alkanols of formula (I) is by hydrogenation of lactones of formula (II) at 100-350°C and 20-350 bar in the presence of a catalyst (III) contg. Co and at least one of the elements Mn, Cu and P;		<b>MORE SPECIFICALLY</b> Structure (II) contains Co and at least three of the elements Mn, Cu, P, Mo and Na; at least 40 wt. % of the active catalyst material consists of Co, pref. with up to 10 wt. % Mn, up to 10 wt. % P and up to 1 wt. % Na as other active components, esp. pref. 40-80 wt. % Co, 3-7 wt. % Mn, 0.1-3 wt. % P and 0.01-0.5 wt. % Na, or with up to 10 wt. % Mn, up to 30 wt. % Cu, up to 5 wt. % Mo, up to 10 wt. % P and up to 1 wt. % Na, esp. pref. 40-60 wt. % Co, 3-7 wt. % Mn, 0.1-3 wt. % P, 12-20 wt. % Cu, 0.5-5 wt. % Mo and 0.01-0.5 wt. % Na.	<b>DETAIL</b> (II) is, e.g. $\gamma$ -butyrolactone, $\delta$ -valerolactone or alkyl-substd. derivs. thereof, etc.; (III) is produced by impregnating a support (silica, alumina, TiO <sub>2</sub> , active EP-382050-A+).
X = -CR <sup>5</sup> R <sup>6</sup> - or -CR <sup>5</sup> R <sup>6</sup> -CR <sup>7</sup> R <sup>8</sup> -; and R <sup>1</sup> -R <sup>6</sup> = H, OH, or 1-4C alkyl, alkoxy or hydroxalkyl (R <sup>1</sup> , R <sup>2</sup> , R <sup>5</sup> and R <sup>7</sup> can also = 5-7C cycloalkyl).			

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carbon, zeolite, etc.) with aq. solns. of the corresp. metal salts and P cpds., drying, and calcining at 400-600°C to form metal oxides and phosphoric acid; the oxides are reduced to the corresp. metals with hydrogen before use.

EXAMPLE

A catalyst contg. 52.5 wt.% Co, 5.1 wt.% Mn, 15.3 wt.% Cu, 2.2 wt.% Mo, 1.1 wt.% P and 0.1 wt.% Na was produced as above (extruded pellets, 2mmx3mm dia.) and reduced with hydrogen for 72 hrs. at 310°C and 250 bar; hydrogenation was carried out in a tube reactor at 208°C and 60 bar, using 1212 l/hr. hydrogen; under these conditions  $\gamma$ -butyrolactone was hydrogenated at 98 g/hr. (1.14 mol.) to give 51.6 g/hr. (0.6 mol.) unchanged starting material, 35.1 g/hr. (0.39 mol.) butane-1, 4-diol, 0.15 g/hr. (0.002 mol.) THF, 0.6 g. g/hr. (0.01 mol.) n-butanol, 0.4 g/hr. (0.006 mol.) n-propanol and 0.4 g/hr. (0.022 mol.) water. (Tpp1712HWDwgN0/0),  
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